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Preface

In the name of ALLAH, Most Gracious, Most Merciful and Muhammad S.A.W., the last prophet.

First and foremost I would like to congratulate the editorial board and authors of the *Borneo Akademika* journal on their success in producing this journal. This achievement is actually the result of their tireless effort in contributing thoughts and ideas to produce papers on current issues and challenges in multi-disciplinary research. To the best of my knowledge, efforts to produce a home-grown UiTM Sabah journal actually started ten years ago, and today we see the fruits of our labour and patience. This shows us that total commitment from the academic community is required in the journey towards academic publication so that joint research efforts can be enhanced.

This journal consists of twelve peer-reviewed articles based on current research topics of interest. Each topic is unique by way of its research methodology and findings in various related fields. The papers in this journal are useful to fellow researchers who share a similar interest in the field or those who are directly involved in exploring multi-disciplinary research. We hope that this publication can be a reference for academicians and students alike, particularly those in UiTM as well as the general public.

Finally, I would like to take this opportunity to acknowledge the dedication of our editorial board and invited/field editors who have in one way or another contributed to the successful publication of this journal. My gratitude goes out to all the authors who contributed articles to this publication because this journal would not have become a reality without them.

Thank you.

Datuk Dr. Hj. Abdul Kadir Hj. Rosline
Chief Editor

Prakata

Dengan Nama Allah Yang Maha Pemurah Lagi Maha Mengasihani. Salam dan Selawat ke atas Junjungan Besar Nabi Muhammad SAW rasul akhir zaman.

Pertamanya saya ingin mengucapkan setinggi-tinggi tahniah kepada sidang penyunting dan penulis artikel jurnal Borneo Akademika yang menyumbang tenaga dan idea dalam isu dan cabaran terkini kajian pelbagai-bidang. Penerbitan jurnal ini adalah kesinambungan usaha lampau yang kurang aktif semenjak hampir sepuluh tahun lalu. Jurnal ini menggambarkan keperluan komitmen yang jitu daripada warga akademik bagi megembang kesignifikanan usaha-usaha dalam penyelidikan.

Jurnal ini mengandungi dua belas artikel yang dinilai oleh penilai jemputan/bidang berasaskan kajian semasa. Setiap tajuk yang dibincang mempunyai keunikan tersendiri yang metodologi dan dapatannya dikupas berdasarkan bidang kajian yang dibuat. Usaha ini amat memberi manfaat kepada penyelidik-penyelidik terutamanya mereka yang terlibat secara langsung dalam kajian terkini pelbagai-bidang. Tambahan pula, kami berharap agar penerbitan ini akan menjadi sumber rujukan kepada ahli akademik dan pelajar terutamanya di UiTM dan juga kepada orang awam lain.

Akhirnya, kami ingin mengambil kesempatan untuk merakamkan setinggi-tinggi penghargaan kepada semua ahli sidang penyunting dan penyunting jemputan atas sumbangan yang merupakan satu lagi cara menyumbang kepada kejayaan penerbitan jurnal ini. Terima kasih khas ditujukan kepada semua penulis yang menyumbang artikel untuk tujuan penerbitan ini kerana tanpa sumbangan mereka penerbitan ini tidak mungkin dapat dijayakan.

Terima kasih.

Datuk Dr. Hj. Abdul Kadir Hj Rosline
Ketua Penyunting

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MEDICINAL PLANTS USED BY THE BRUNEI COMMUNITY IN KAMPUNG BENONI, PAPAR SABAH

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ABSTRACT

This study was carried out through a semi-structured interview with respondents via the 'snowballing' technique in Kampung Benoni, Papar, Sabah. There were about 43 species of medicinal plants found used by the Brunei community to treat 15 type of diseases. The findings of this study show that one plant was used to treat eye diseases; two plants were used to treat the otorhinolaryngologic disease; three plants were used to treat the stomatognathic disease; four plants were used to treat endocrine system diseases; six plants were used to treat skin diseases and substance-related disorders; eight plants were used to treat bacterial infections, mycoses, and viruses, musculoskeletal diseases, hemic and lymphatic diseases, pregnancy complications and female urogenital disease; nine plants were used to treat occupational diseases; 13 plants were used to treat digestive system diseases, immune system diseases and respiratory tract diseases; and 19 plants were used to treat wounds and injuries. The most common part of plants used in preparing herbal medicine is the leaves. The most common method of preparation is decoction and poultice. The plants came from 29 families. This study is helpful to assist us in recognising other potentials of the plants that can be used for medicinal purposes. The information in this paper will serve as baseline data for future phytochemical and pharmacological studies.

Keywords: Brunei community; medicinal plants

ABSTRAK

Kajian ini dilakukan melalui temu ramah separa berstruktur terhadap responden melalui teknik 'snowballing' di kampung Benoni, Papar, Sabah. Terdapat 43 tumbuhan ubatan yang telah dikenalpasti digunakan oleh komuniti Brunei untuk merawat 15 jenis penyakit. Satu tumbuhan digunakan untuk merawat penyakit mata, dua tumbuhan digunakan untuk merawat penyakit otorhinolaryngologik, tiga tumbuhan digunakan untuk merawat penyakit stomatognatik, empat tumbuhan digunakan untuk merawat penyakit berkenaan sistem endokrin, enam tumbuhan digunakan untuk merawat setiap kategori penyakit kulit dan penyakit berkenaan dengan alatan, lapan tumbuhan digunakan untuk merawat setiap kategori penyakit jangkitan bakteria, kulat, dan virus, penyakit berkaitan dengan otot, penyakit berkaitan dengan hemik dan limfa, komplikasi mengandung dan urogenital wanita, sembilan tumbuhan digunakan untuk merawat penyakit berkaitan dengan kerja, 13 tumbuhan digunakan untuk merawat setiap kategori penyakit berkaitan dengan sistem penghadaman, sistem imunisasi, dan sistem pernafasan, dan 19 tumbuhan digunakan untuk merawat luka. Bahagian tumbuhan yang sering digunakan dalam penyediaan ubat-ubat ialah bahagian daun. Kaedah yang sering kali digunakan ialah minuman rebusan dan demah. Tumbuh-tumbuhan berkenaan datang daripada 29 famili. Kajian ini akan membantu kita secara tidak langsung untuk mengenalpasti potensi lain

tumbuhan ini yang boleh digunakan untuk tujuan ubatan. Maklumat ini juga akan dijadikan sebagai data asas untuk kajian phytokimia dan farmakologi.

Kata kunci: Komuniti Brunei; tumbuhan ubatan

1.0 Introduction

There are a lot of recent studies about medicinal plants used by different races or ethnic groups in Malaysia. However, most of these studies have focused on communities in the Peninsular Malaysia, and less studies have been carried out on communities in Sabah and Sarawak. Although the documentation of medicinal plants is still on-going, there is a lot of information that has not been discovered yet and there is limited documentation of data about medicinal plants used by communities in Sabah and Sarawak (Hean, Rosnaini & Milow, 2011).

Kampung Benoni Papar, Sabah is located at latitude 5 44' 58" North and longitude 115 55' 11" East. According to the Department of Statistics Malaysia (2011), Kampung Benoni has the highest population of the Brunei community (an ethnic race) and they represent about 90% of the 3,452 people in the area. This statistic is based on an official counting of population in the year 2000 when the population of Papar was 16,645 people. The Brunei community has its own culture such as marriage tradition, costumes, traditional musical instruments and traditional food (Pejabat Daerah Papar, 2012). Kampung Benoni is blessed with an abundance of natural resources, especially in the form of plants. The Brunei community has its own way of curing illnesses by using plants. This research will be beneficial to the public as a reference about the medicinal plants used by the Brunei community.

2.0 Methods

Data collection was done through semi-structured interviews with the Brunei community in Kampung Benoni, Papar, Sabah. Respondents were selected via the 'snowballing technique', whereby information was gained through referrals and word of mouth (Packer et al., 2012). The interviews were guided by a questionnaire which was developed with the intention to collect comprehensive and standardised information for database entry (Gaikwad et al., 2008). After data from the sample was collected, the respondents guided the researchers to the location of the plants in order for specimens to be collected. Overall, individual plants that represented almost all phases of the natural plant population were collected as specimens. Collection of insect-damaged specimens was avoided. Underground parts such as roots and rhizomes of herbaceous perennials were also collected. Those specimens of flowering plants that contained flowers, fruits and seeds were collected as well.

The specimens were processed and pressed. Then the specimens were dried, mounted and labelled. The vernacular name of the plants collected were referred to in the reference book, Medicinal and Poisonous Plants. For plants that did not have any vernacular names, the plants were compared with mounted plants in the herbarium by looking at the leaf morphology. From the vernacular names, the scientific name and family of the plants were identified. The phylogeny of the plants was then identified by referring to the database system from the Integrated Taxonomic Information Centre. The phylogenetic trees were constructed.

3.0 Results

The results of this study show that 43 species of plants were commonly used by the Brunei community in Kampung Benoni Papar for medicinal purposes. The methods of preparation for herbal medicine varied but the most common preparation methods were by boiling certain parts of the plant in water for decoction and also as poultice. The most common part of the plant used was the leaves as these were easy to obtain and prepare. The medicinal plants treated almost 15 types of diseases which were mostly related to the digestive system, respiratory tract, immune system and also wounds and injuries. The medicinal plants of these 43 species came from 29 families which reflected the botanical diversity of Kampung Benoni. All the data are documented in Table 1 to Table 8, in alphabetical order (according to the scientific name of the plants).

Table 1: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (A,B)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Aloe barbadensis</i> Mill., <i>Aloe vera</i> (L.) Burm.f. Vernacular name: Lidah Buaya	<i>Aloe vulgaris</i> Lam., <i>Aloe perfoliata</i> var. <i>Vera</i> L.	Gel	Small cut	Sweep onto the affected area
			Skin burn	
			Itchy throat (babies)	Eat the gel
			High body temperature	Apply to the skin
			Asthma	Mix the gel with sugar and take as tonic
Scientific name: <i>Andrographis paniculata</i> (Burm.f.) Wallich ex Nees Vernacular name: Hempedu Bumi	<i>Andrographis subspatulata</i> C.B. Clarke	Leaves	Fever	Clean, boil in water and drink when it is warm
			High blood pressure	
			Small cut Snake bite Insect bite	Pound into a paste and apply on the infected area
Scientific name: <i>Boesenbergia rotunda</i> (L.) Mansf Vernacular name: Temu Kunci	<i>Kaempferia pandurata</i> Roxb.	Rhizomes	High blood pressure Stomachache Pain after giving birth	Boil in water to make a decoction and drink
		Rhizomes and leaves	Sprain	Pound into paste and apply on the affected area

Table 2: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (C1)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Canna orientalis</i> Linn Vernacular name: Bunga Canna	<i>Canna orientalis</i> var. <i>flava</i>	Flower	Metrorrhagia	Dry, boil in water to make decoction and drink
Scientific name: <i>Capsicum annuum</i> var. <i>Minus</i> (Fingerh.) <i>Capsicum frutescens</i> Linn Vernacular name: Cili padi	<i>Capsicum annuum aviculare</i> (Diebach) D' Arcy & Eshbaugh	Leaves	Rheumatism Abscess Wound swelling	Grind the leaves and paste onto the related area
		Fruits	Ulcer in the mouth	Boil a fruit with water to make decoction and drink

Scientific name: <i>Carica papaya</i> Linn Vernacular name: Betik		Young leaves	Swelling Abscess	Paste on the affected area
			Stomachache	Boil in water to make a decoction and drink
		Latex	Wart Blemish	Sweep onto the affected area
Scientific name: <i>Vinca rosea</i> L., <i>Ammocallis rosea</i> (L.) Small, <i>Lochnera rosea</i> (L.) Reichenb. ex Endl.		Leaves	Wound	Extract the juice from the leaves by crushing it
		Flower	Diabetes Malaria Cough Lactation	Boil in water to make a decoction and drink
Scientific name: <i>Celosia cristata</i> L. Vernacular name: Balung Ayam	<i>Celosia argentea</i> var. <i>cristata</i> , <i>Celosia pyramidalis</i> Linn	Stem	Swelling Small cut Abscess	Pound into paste and apply on the affected area
		Stem and flowers The whole plant	Cough Hemorrhoid Dysentery Cough	Boil in water to make a decoction and drink
Scientific name: <i>Centella asiatica</i> (L.) Urban Vernacular name: Pegaga	<i>Centella erecta</i> (L. f) Fernald, <i>Centella repanda</i> (Pers.) Small	Leaves	Ulcer in the mouth Wound	Mash leaves are apply onto the area
Scientific name: <i>Cheilocostus speciosus</i> (J.Koenig) Specht Vernacular name: Setawar Halia	<i>Costus speciosus</i> (Koenig) Small, <i>Banksia speciosa</i> Koenig	Leaves	Fever	Boil in water to prepare decoction and bathe in the water
			Smallpox	Crush the leaves and use in poultice to apply to affected area
Scientific name: <i>Citrus microcarpa</i> Bunge Vernacular name: Limau Kasturi	<i>Citrus mitis</i> Blanco	Leaves	Fever	Boil in water then soak a cloth in the water and put on the forehead
		Fruits	Cough Smoking addiction Sore throat	Make a juice from the fruit and drink

Table 3: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (C2)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Cosmos caudatus</i> Kunth Vernacular name: Ulam Raja	<i>Bidens caudatus</i> L.	Leaves	Cleansing of blood Strengthen the bones	Eat raw
Scientific name: <i>Curcuma longa</i> L. Vernacular name: Kunyit biasa	<i>Curcuma domestica</i> Valeton	Rhizomes	Small cut Itchy skin	Pound into paste and apply on affected area
Scientific name: <i>Cymbopogon nardus</i> (L.) Rendle Vernacular name: Serai Wangi	<i>Andropogon nardus</i> L., <i>Sorghum nardus</i> (L.) Kuntze	Leaves	Headache Rheumatism	Paste the leave on the area
		Leaves, roots	Stomachache Flatulence	Boil in water to make a decoction and drink

Table 4: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (D, E)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Drymoglossum piloselloides</i> C. Presl Vernacular name: Sisik Naga	<i>Pyrrosia piloselloides</i> (L.) M.G.Price	Leaves	Gallstone Dieresis High blood pressure	Boil in water to make a decoction and drink
Scientific name: <i>Eichhornia crassipes</i> (Mart.) Solms Vernacular name: Keladi Agas	<i>Piaropus crassipes</i> (Mart.) Solms	Leaves Roots	Cough Stomachache Asthma Toothache	Boil in water to make a decoction and drink
Scientific name: <i>Euphorbia hirta</i> Linn Vernacular name: Rumput Susu Kambing	<i>Euphorbia pilulifera</i> auct. non L., <i>Chamaesyce hirta</i> (L.) Millsp., <i>Chamaesyce pilulifera</i> (L.) Small	The whole plant	Headache Asthma	Dry, boil in water and drink

Table 5: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (G, H, J, K)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Gynandropsis gynandra</i> (L.) Briq Vernacular name: Maman Hantu	<i>Cleome gynandra</i> L., <i>Cleome pentaphylla</i> L.	The whole plant	Rheumatism Hemorrhoid	Boil in water to make a decoction and drink
Scientific name: <i>Hibiscus rosasinensis</i> L. Vernacular name: Bunga Raya	<i>Hibiscus boryanus</i> , <i>Hibiscus festalis</i>	Leaves Flower Leaves, roots, flower	Mump Fever Cough Phlegm Menstruation Fever	Pound into paste and apply on the swollen area Boil in water to make decoction and drink Boil in water to make a decoction and drink
Scientific name: <i>Jatropha curcas</i> Linn Vernacular name: Jarak Betina	<i>Curcas purgans</i> Medik., <i>Curcas indica</i> A. Rich., <i>Jatropha affrocurcas</i> Pax	Latex Leaves	Toothache Arthritis Rheumatism	Paste on the teeth Boil in water to make a decoction and drink Pound the leaves, mix with hot water and sweep onto the area
Scientific name: <i>Justicia gendarussa</i> Burm.f.	<i>Gendarussa vulgaris</i> Nees	Leaves Roots	Rheumatism Headache Swelling Diarrhoea	Pound into paste and apply on affected area Boil in water to make a

Vernacular name: Gandarusa				decoction and drink
Scientific name: <i>Kalanchoe pinnata</i> (Lam.) Pers. Vernacular name: Setawar	<i>Cotyledon pinnata</i> Lem., <i>Bryophyllum pinnatum</i> (Lam.) Oken	Leaves	Stomachache Fever	Grind with water to make decoction and drink
Scientific name: <i>Kaemferia galanga</i> Linn Vernacular name: Cekur	<i>Kaemferia latifolia</i> Donn ex Hornem	Leaves	Dandruff	Boil in water, cool the water and wash hair with the decoction
		Rhizomes	Food poisoning	Boil in water to make a decoction and drink
		Leaves and rhizomes	Cough Sore throat	Chew

Table 6: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (M, O)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Manihot esculenta</i> Crantz Vernacular name: Ubi Kayu	<i>Manihot aipi</i> Pohl, <i>Manihot dulcis</i> (J.F. Gmel)	Leaves	Headache	Pound into paste and apply on the forehead
		Young leaf stalks	Fester	Pound into paste and apply on the wound
		Stem	Fever	Boil with three glasses of water, filter and drink
Scientific name: <i>Melastoma malabathricum</i> L. Vernacular name: Senduduk	<i>Melastoma normale</i> D. Don, <i>Melastoma polyanthum</i> Blume	Leaves	Diarrhoea	Boil in water to make a decoction and drink
Scientific name: <i>Mimosa pudica</i> L. Vernacular name: Rumput Semalu	<i>Mimosa pudica</i> L. var. <i>tetrandra</i> (Wild.) D.C.	The whole plant	Abscess Wound Swelling	Pound with turmeric and a little rice into a paste and apply on the affected area
		Leaves and stems	Insect bite White spot on skin	Pound into paste and apply on the affected area
		Roots	Mitigation discharge Malaria Asthma Stomachache	Boil in water to make a decoction and drink
Scientific name: <i>Morinda citrifolia</i> Linn Vernacular name: Mengkudu	<i>Morinda bracteata</i> Roxb.	Fruits	Skin disease Diabetes High blood pressure	Make into a juice and drink
Scientific name: <i>Murraya koenigii</i> (L.) Spreng Vernacular name: Daun Kari	<i>Bergera koenigii</i> L., <i>Chalcas koenigii</i> (L.) Kurz.	Leaves	Swelling Bruise	Pound into paste and apply on affected area
			Digestion problem Nausea	Drink the juice from the leaves
		Stem	Diabetes	Boil the bark of the stem in water to make decoction and drink
Scientific name:	<i>Ocimum sanctum</i>	Leaves	Asthma	Extract juice from the leaves and

Medicinal Plants Used By The Brunei Community In Kampung Benoni, Papar Sabah

<i>Ocimum tenuiflorum</i> L.	L.		Cough Gastric	drink Boil in water and drink
Vernacular name: Kemangi				
Scientific name: <i>Orthosiphon stamineus</i> Benth., <i>Orthosiphon grandiflorum</i> Miq.	<i>Orthosiphon stamineus</i> Benth., <i>Orthosiphon grandiflorum</i> auct. non Terrac., <i>Orthosiphon spicatus</i> auct. non Benth.	Leaves	Diabetes Kidney failure	Dry the leaves, boil in water and drink
Vernacular name: Misai Kucing				

Table 7: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (P, R)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Peperomia pellucida</i> (L.) Kunth	<i>Piper pellucidum</i> L., <i>Piper exiguum</i> Blume	Leaves	Abscess Pimple Blister	Pound into paste and apply on affected area
Vernacular name: Ketumpangan air		The whole plant	Rheumatism Cough Flu High blood pressure	Boil in water to prepare decoction and drink
Scientific name: <i>Phyllanthus amarus</i> Schum. Et Thonn	<i>Phyllanthus swartzii</i> Kostel., <i>Phyllanthus nanus</i> Hook f., <i>Phyllanthus niruri</i> auct. non. L.	The whole plant	Diarrhoea Blood pressure	Boil in water to make decoction and drink
Vernacular name: Dukung Anak			Swelling Cut	Pound into paste, mix with rice water and apply on the swollen area
Scientific name: <i>Physalis minima</i> Linn	<i>Physalis eggersii</i> O.E. Schulz, <i>Physalis lagascae</i> Roem. & Schult	Fruits	Sore throat	Make a juice from ripe fruits and drink
Vernacular name: Letup-letup				
Scientific name: <i>Piper caducibracteum</i> C. DC	-	Leaves and stems	Mitigation discharge	Boil in water and use as a feminine wash
Vernacular name: Sirih Hutan		Leaves	Itchy skin	Boil in water and wash on the skin
Scientific name: <i>Piper sarmentosum</i> Roxb	<i>Piper lolot</i> C.DC	Leaves	Earache	Squeeze out the water from the leaves and drop inside the ear
Vernacular name: Kaduk			Cough Flu Toothache Malaria	Boil in water to prepare decoction and drink
Scientific name: <i>Coleus blumei</i> Benth., <i>Coleus plectranthus scutellarioides</i> (L.) R.Br.	<i>Coleus blumei</i> Benth., <i>Coleus atropurpureus</i> Benth., <i>Coleus</i>	Leaves	White spot on skin caused by fungal infection	Pound into paste and apply on affected area
Vernacular name:			Asthma (kids)	Rub young leaves with chalk until it is crushed, apply on the chest before sleep
			Cough Smallpox	Boil in water to prepare decoction and drink

Ati-Ati	<i>scutellarioides</i> , <i>Solenostemon</i> <i>scutellarioides</i> (L.) Benth, <i>Plectranthus</i> <i>blumei</i> (Benth.) Laune			
Scientific name: <i>Ricinus communis</i> L.	<i>Ricinus microcarpus</i> G Popova	Leaves	Mitigation discharge	Boil in water and use as afeminine wash
Vernacular name: Jarak Jantan		Shoot and leaves	Fever	Pound into a paste and apply on the forehead

Table 8: Medicinal plants used by the Brunei Community in Kampung Benoni, Papar (S, Z)

Plant Name	Synonyms	Part Used	Disease	Method Of Preparation
Scientific name: <i>Sansevieria</i> <i>trifasciata</i> Prain var <i>laurentii</i> (De Wild.) N E Br	<i>Sansevieria laurentii</i>	Leaves	Earache	Heat the leaves and drop the juice into the ear
Vernacular name: Lidah Jin			Itchy skin	Crush the leaves and use in poultice to apply on itchy skin
			Toothache	Heat the leaves and sweep the juice on the teeth
Scientific name: <i>Saurapus</i> <i>androgynus</i> (L.) Merr	-	Leaves	Sore eye Fever	Make a juice from the leaves and drink
Vernacular name: Cangkuk Manis				
Scientific name: <i>Sesbania</i> <i>grandiflora</i> Linn	<i>Agati grandiflora</i> (L.) Desv, <i>Robinia grandiflora</i> L.	Bark	Diarrhoea Stomachache	Boil in water to prepare decoction and drink
Vernacular name: Pokok Geti		Roots	Ulcer in mouth	Pound and wash inside mouth with it and water
Scientific name: <i>Solanum tarvum</i> Swartz	<i>Solanum ficifolium</i> L.	Fruits	Cough Phlegm	Boil in water to prepare decoction and drink
Vernacular name: Terung Pipit			High blood pressure	Cook and eat
Scientific name: <i>Stachytarpheta</i> <i>jamaicensis</i> Vahl	<i>Stachytarpheta indica</i> L.	Leaves	Abscesses Small cuts Swellings	Pound into a paste and apply on the affected area
Vernacular name: Selasih Dandi		Roots	Gonorrhea	Boil in water to prepare decoction and drink
Scientific name: <i>Zingiber officinale</i> Roscoe	<i>Amomum zingiber</i> L., <i>Zingiber Zingiber</i> (L.) H. Karst	Rhizomes	Rheumatism	Burn it, then wash with water, grate and apply to the related area.
Vernacular name: Halia Raja				

4.0 Discussion

All the medicinal plants belong to the kingdom of Plantae, subkingdom of Viridiplantae and the infrakingdom of Streptophyta. Viridiplantae refers to the green plants and Streptophyta refers to the land plants. The infrakingdom of Streptophyta has the phylum of Tracheophyta which refers to vascular plants. This Tracheophyta is then divided into three classes that are Magnoliopsida, Spermatopsida and Polypodiopsida.

Magnoliopsida is the class that comprises seed plants that produce an embryo with paired cotyledons and have net-veined leaves. The class of Magnoliopsida comprises 18 orders - Asparagales, Lamiales, Zingiberales, Solanales, Brassicales, Gentiales, Caryophyllales, Apiales, Asterales, Poales, Commelinales, Malpighiales, Malvales, Saxifragales, Myrtales, Fabales, Sapindales and Piperales. The order of Asparagales is divided into two families that are Xanthorrhoeaceae and Asparagaceae. The plant under the family of Xanthorrhoeaceae is *Aloe vera* (L.) Burm.f. with the genus of *Aloe* L. *Sansevieria trifasciata* Prain var *laurentii* (De Wild.) N.E.Br is under the Asparagaceae family with the genus of *Sansevieria* Thunb.

The order of Lamiales is divided into three families that are Acanthaceae, Lamiaceae and Verbenaceae. *Andrographis paniculata* (Burm.f.) Wallich ex Nees belongs the Acanthaceae family with the genus of *Andrographis* Wall. Ex Nees. *Ocimum tenuiflorum* L., *Orthosiphon aristatus* (Blume) Miq., and *Plectranthus scutellarioides* (L.) R.Br. are in the Lamiaceae family with the genus of *Ocimum* L., *Orthosiphon* and *Plectranthus* respectively. *Stachytarpheta jamaicensis* Vahl is under the Verbenaceae family with the genus of *Stachytarpheta* Vahl. The order of Zingiberales is divided into three families that are Zingiberaceae, Cannaceae, and Costaceae.

Boesenbergia rotunda (L.) Mansf, *Curcuma longa* L., *Kaempferia galanga* L., and *Zingiber officinale* Roscoe are in the family of Zingiberaceae with the genus of *Boesenbergia* Kuntze, *Curcuma* L., *Kaempferia* L., and *Zingiber* Mill. respectively. *Canna orientalis* L. belongs to the Cannaceae family with the genus of *Canna* L. Meanwhile, *Cheilocostus speciosus* (J.Koenig) Specht is under the family of Costaceae with the genus of *Cheilocostus*. The order of Solanales only has one family that is Solanaceae. Solanaceae is divided into three genera which are *Capsicum* L., *Physalis* L., and *Solanum* L. The medicinal plants under these genera are *Capsicum frutescens* Linn, *Physalis minima* L., and *Solanum torvum* Swartz respectively. The order of Brassicales has the family of Caricaceae. The genus of *Carica* belongs to this family with *Carica papaya* L. as the species. The Gentianales order has the family of Apocynaceae with the genus of *Catharanthus* G. Don. The species that belongs to this genus is *Catharanthus roseus* (L.) G. Don. The order of Caryophyllales has the Amaranthaceae family. The genus under this family is *Celosia* L. with the species of *Celosia cristata* L. The Apiales order has the family of Apiaceae with the genus of *Centella* L. The species that belongs to this genus is *Centella asiatica* (L.) Urban. The Asterales order has the family of Asteraceae with the genus of *Cosmos* Cav. The species that belongs to this genus is *Cosmos caudatus* Kunth. The Poales order has only one family that is Poaceae. This family has the genus of *Cymbopogon* Spreng. with the species of *Cymbopogon nardus* (L.) Rendle. The order of Commelinales has the family of Pontederiaceae with the genus of *Eichhornia* Kunth. The species that belong to this genus is *Eichhornia crassipes* (Mart.) Solms. The Malpighiales order has three families that are Euphorbiaceae, Cleomaceae, and Phyllanthaceae. The family of Euphorbiaceae has the genus of *Euphorbia* L. with the species of *Euphorbia hirta* L. The family of Cleomaceae has the genus of *Gynandropsis* with the species of *Gynandropsis gynandra* (L.) Briq. The family of Phyllanthaceae has the genus of *Phyllanthus* L. with the species of *Phyllanthus amarus* Schum. Et Thonn. The order of Malvales has the family of Malvaceae. This family has the genus of *Hibiscus* L. with the species of *Hibiscus rosa-sinensis* L. The Saxifragales order has the family of Crassulaceae.

The genus that belongs to this family is *Kalanchoe* Adans with the species of *Kalanchoe pinnata* (Lam.) Pers. For the order of Myrtales, it belongs to the Melastomataceae family with the genus of *Melastoma* L. The species that belongs to this genus is *Melastoma malabathricum* L. The order of Fabales has one family under it, that is Fabaceae. This family has two genera, which are *Mimosa* L. and *Sesbania* Scop. The species under these genera are *Mimosa pudica* L. and *Sesbania grandiflora* L. respectively. For the order of Sapindales, it has the family of Rutaceae with the genus of *Murraya*. This genus has the species of *Murraya koenigii* (L.) Spreng. The Piperales order belongs to the family of Piperaceae. Genus *Peperomia* Ruiz & Pav. belongs to this family with the species of *Peperomia pellucida* (L.) Kunth.

Spermatopsida is the class that comprises those plants that produce seeds including any of the angiosperms or gymnosperms. For the class of Spermatopsida, it comprises three orders - Sapindales, Lamiales and also Piperales. The order of Sapindales has the family of Rutaceae. The genus that belongs to this family is *Citrus* with the species of *Citrus microcarpa* Bunge. The Lamiales order has the family of Acanthaceae with the genus of *Justicia*. The species that belongs to this genus is *Justicia gendarussa* Burm.f. For the Piperales order, the family that belongs to it is Piperaceae. This family has the genus of *Piper* with two species. The species are *Piper caducibracteum* C. DC and *Piper sarmentosum* Roxb.

Polypodiopsida is the class in which the stems of the ferns are spirally arranged and the leaves with sporangia are grouped in sori on their undermargins. The class of Polypodiopsida has the order of Polypodiales. The family that belongs to this order is Polypodiaceae with the genus of *Drymoglossum*. The species under this genus is *Drymoglossum piloselloides* C. Presl.

5.0 Recommendation

It is recommended that future researchers identify the chemicals in the medicinal plants that cause them to have the potential to cure some common diseases. This may lead to further research on identifying other potentials of the medicinal plants other than for medicinal purposes. In addition, it is also recommended that researchers identify the medicinal plants used by other communities in the area of Papar to distinguish the methods of preparation for herbal medicines. The common plants used by other communities can also be compared with those used by the Brunei community in Kampung Benoni, Papar.

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